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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/570,151	03/01/2006	Hiroshi Nakatani	071850	8047

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EXAMINER	
VAJDA, PETER L	

ART UNIT	PAPER NUMBER
1795	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/570,151	NAKATANI, HIROSHI	
	Examiner	Art Unit	
	PETER L. VAJDA	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 December 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The applicant's reply filed 12/22/2008 has been received and considered. The applicant has amended claim 1 and cancelled claim 2. Claims 1 and 3-17 are therefore pending.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 and 3-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites an toner comprising a silica fine particle (A) having a Dv50/Dv10 of 1.8 or more and then later teaches that the same silica fine particle (A) has a Dv50/Dv10 of 2 or more. Since the second Dv50/Dv10 (2) value is greater than the first (1.8) it is not possible for both limitations to be true. It is believed that the applicant neglected to excise the first limitation of the particle having a Dv50/Dv10 when the amendment was added to limit the Dv50/Dv10 to 2 or more. Therefore, it is assumed in this action that the applicant intended to replace the value of 1.8 or more with the value of 2 or more.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3, 6-8, 10-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takiguchi *et al.* (US PGP 2004/0043315) in view of JP 2002-182423.

Takeguchi teaches toner particles having weight average particle diameters in the range of 3 to 12 microns along with conductive inorganic fine particles having volume average particle diameters (D50) in the range of 0.4 to 4.0 microns (Abstract). Takiguchi also teaches values for particle distributions by citing the diameters of the largest 10% of particles sizes (D90) and the smallest 10% of particle sizes (D10). Table 1 reports said values, and the majority of the inventive embodiments represented therein have Dv50/Dv10 ratios of 2 or greater (specifically embodiments 1, 3-4, 6-7 and 12, p. 23 [0304]). A suitable inorganic fine particle is taught to be silicon oxide (p. 5 [0070]). Takiguchi also teaches the addition of a second inorganic fine powder as a flow aid and having an average primary particle diameter in the range of from 4 to 80 nm (p. 6 [0079]). The toner particles are also taught to comprise a wax, including several synthetic waxes or polyfunctional ester waxes that will inherently act as parting agents (p. 11-12 [0171]). Additionally the toner is also taught to comprise a charge control agent and is further taught that the charge control agent be a monopolymer or a copolymer (p. 13 [0190-92]). Takiguchi, however, does not teach a sphericity for the inorganic particles nor for the colored resin particles.

JP 2002-182423 (henceforth '423) teaches a toner comprising a spherical silica external additive with a mean particle diameter of 0.03 to 1 micrometer ([0006]). The sphericity of said silica particles is taught to be from 1.0 to 1.3 ([0043]). It is taught that when the sphericity is in this range developing efficiency and transferability improve and fogging is reduced ([0043]). Furthermore, the toner comprises a colored resin particle having a sphericity in the range of from 1 to 1.3 and a volume average particle diameter of from 3-12 micrometers ([0009]). JP '423 teaches that when the colored resin particle has a sphericity within this range, mobility becomes good improving developing efficiency, transferability and reducing fogging ([0009]). The colored resin particles are also taught to have a ratio of Dv/Dn of volume average (Dv) to number average (Dn, which is the same as the applicant's Dp) particle size be in the range of from 1-1.3 ([0009]).

JP '423 teaches that developing efficiency, transferability and fog reduction can be improved by employing colored resin particles and inorganic external additives with a sphericity of from 1.0 to 1.3 and by setting the Dv/Dn ratio in the range of from 1 to 1.3. Therefore, it would have been obvious to any person of ordinary skill in the art at the time of the invention to have produced the toner particles of Takiguchi *et al.* having the sphericity and Dv/Dn in the range taught by JP '423 and by setting the sphericity of the external additives in the range taught by JP '432.

Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takiguchi *et al*. (US PGP 2004/0043315) in view of JP 2002-182423 as applied to claims 1, 3, 6-8, 10-16 above, and further in view of JP 2003-029450.

The complete discussions of Takiguchi *et al*. and JP '423 presented above are included herein. Neither Takiguchi nor JP '423, however, does teach a bulk density for the external additives present on the toner particles.

JP 2003-029450 (henceforth JP '450) teaches a toner comprising colored particles and an external additive wherein said external additive is taught to have a bulk density of from 100 to 250 g/l ([0013]). JP '450 teaches that when an external additive (JP '450 teaches silica) has a bulk density of less than 100 g/l it makes it difficult for the additive to adhere to the toner particle and the additive separates. The loose additive adheres to the photoconductor, transfer member, and other parts of the xerographic apparatus and causes problems such as filming and poor cleaning. Furthermore, when a two component developer is employed the additive may adhere to the surface of the carrier and thereby reduce the charging abilities of the carrier. However, if the additive has a bulk density greater than 250 g/l, the mobility of the toner is decreased and the ability of the additive to disperse in the toner production steps will also decrease ([0014]).

Therefore, according to JP '450 the bulk density of a silica additive is very important to its ability to interact with the toner particles and thereby prevent it from clogging and contaminating the various parts of the xerographic image as well as the carrier particles in a two component system. JP '423 also teaches that developing

efficiency, transferability and fog reduction can be improved by employing colored resin particles and inorganic external additives with a sphericity of from 1.0 to 1.3 and by setting the Dv/Dn ratio in the range of from 1 to 1.3. Therefore, it would have been obvious to any person of ordinary skill in the art at the time of the invention to have produced the toner particles of Takiguchi *et al.* having the sphericity and Dv/Dn in the range taught by JP '423 and by setting the sphericity of the external additives in the range taught by JP '432 and wherein the external additives have the bulk density taught by JP '450.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takiguchi *et al.* (US PGP 2004/0043315) in view of JP 2002-182423 as applied to claims 1, 3, 6-8, 10-16 above, and further in view of Hagi *et al.* (US Patent 5776646).

The complete discussions of Takiguchi *et al.* and JP '423 presented above are included herein. Neither Takiguchi nor JP '423, however, teach the use of a third external additive.

Hagi *et al.* teach a negatively chargeable toner with inorganic additives externally added having a specified number-mean particle size and a specified chargeability (Abstract). Furthermore, the use of three separate inorganic fine particles is taught, the first of which having a number-mean particle size of between 10 to 30 nm, the second having particle size between 10 to 90 nm, and the third having a particle size between 100 to 1000 nm (Col. 3 ln. 6-22). Any of the three inorganic particles may be selected from the group consisting of inorganic fine particles of silica, titania, and strontium

titanate (Col. 4 ln. 16-23, Col. 4 ln. 58-67, and Col. 6 ln. 47- Col. 7 ln. 2). Each additional inorganic particle improves the performance of the toner from increasing the fluidity and chargeability (Col. 4 ln. 5-10) to improving image density and thermal storage stability (Col. 4 ln. 24-57) to reduce fogging (Col. 5 ln. 59 – Col. 6 ln. 35).

Takiguchi and JP '423 both teach the use of at least two inorganic external particles. Hagi *et al.* teaches that each additional particle improves the performance of the toner from increasing the fluidity and chargeability, to improving image density and thermal storage stability, and to reduce fogging. Therefore, it would have been obvious to any person of ordinary skill in the art at the time of the invention to have produced the toner particles of Takiguchi *et al.* having the sphericity and Dv/Dn in the range taught by JP '423 and by setting the sphericity of the external additives in the range taught by JP '432 and wherein the external additives have the bulk density taught by JP '450 and also wherein a third external additive particle was added as taught by Hagi *et al.*

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takiguchi *et al.* (US PGP 2004/0043315) in view of JP 2002-182423 as applied to claims 1, 3, 6-8, 10-16 above, and further in view of Niwa (US PGP 2003/0027070).

The complete discussions of Takiguchi *et al.* and JP '423 presented above are included herein. Neither Takiguchi nor JP '423, however, does teach a molecular weight for the charge control resin present in the toner particles.

Niwa teaches a toner comprising a binder resin, a colorant and a charge control resin (Abstract). Furthermore, said charge control resin is taught to have a molecular

weight of from 2,000 to 40,000. Niwa teaches that when the molecular weight is above this range, handling upon preparation of toner particles is poor so that uniform toner particles cannot be obtained. However, when the molecular weight is below this range, the dispersability of the pigment in the resulting toner is lowered and it is difficult to achieve satisfactory charging which results in fogging (p. 3 [0038]).

JP '423 teaches that developing efficiency, transferability and fog reduction can be improved by employing colored resin particles and inorganic external additives with a sphericity of from 1.0 to 1.3 and by setting the Dv/Dn ratio in the range of from 1 to 1.3. Therefore, it would have been obvious to any person of ordinary skill in the art at the time of the invention to have produced the toner particles of Takiguchi *et al.* having the sphericity and Dv/Dn in the range taught by JP '423 and by setting the sphericity of the external additives in the range taught by JP '432 and to provide the charge control agent with the molecular weight taught by Niwa. This would have allowed for uniform distribution of the charge control resin and a toner which did not exhibit fogging as a result of satisfactory and uniform charging.

Response to Arguments

The applicant's arguments were directed to the disclosure of Inaba *et al.* and were found persuasive, when taken with the amendment to pending claim 1, to overcome the pending rejections. The new rejections posted above do not rely on the

disclosure of Inaba and are posted as necessitated by amendment. This action is therefore made final.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PETER L. VAJDA whose telephone number is (571)272-7150. The examiner can normally be reached on 7:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark F. Huff/
Supervisory Patent Examiner, Art Unit 1795

/PLV/ 04/23/2009